REMARKS

Applicants thank the Examiner for his thorough review of the present Application. Claims presented for prosecution in this Application are claims 35-59 and claims 63-68, claims 1-34 having been canceled by prior amendment and claims 60-62 having been canceled by the present amendment. Claims 60-62 have been objected to as being of improper dependent form. Claims 35-68 have been rejected over cited prior art. In view of Applicants' amendment and remarks below, Applicants respectfully request that the present Response be considered and entered, the objections and rejections to the claims be withdrawn, and that the case now be passed to issue.

The 37 CFR 1.75(c) Rejection of Claims 60-62

The Examiner has objected to claims 60-62 under 37 CFR 1.75(c) as being of improper dependent form for failing to further limit the subject matter of a previous claim. Pursuant to Examiner's suggestion, and solely in an effort to advance prosecution, Applicants have canceled claims 60-62.

The 35 U.S.C. § 102(b) Rejection of Claims 35-41, 50 and 53-68 Over German '998

The Examiner has rejected claims 35-41, 50 and 53-68 as being anticipated to German Patent No. DE 33 13 998 (German '998). Applicants traverse this rejection and respectfully assert that German '998 does not disclose or render obvious each and every element of, at least, independent claims 35 and 59.

With respect to independent claim 35, as currently amended, the term "*metal-forming*," according to its ordinary meaning, relates to a process that modifies the shape of the metallic object being processed by deforming the metal. Caim 35 thus inherently requires that at least some part of the metallic plate body is deformed into a specific shape (geometry) different from its original shape.

The Examiner has correctly noticed that German '998 teaches manufacturing of a plate cooler including shrinkage-fitting of a steel tube in a cast iron plate body by heating the plate body and cooling the tube prior to insertion of the latter into the former (page 9, lines 31-34).

Shrinkage-fitting makes use of thermal expansion and/or thermal contraction, which, for metals at least, is generally isometric (of equal dimension in all directions) and, more importantly, perfectly reversible. Therefore, after a shrinkage-fit has been applied in accordance with German '998, the shape (geometry) of the cast iron plate is identical to its initial shape (geometry).

Based on the proper interpretation of the expression *"metal-forming,"* and since the process taught by German '998 does not involve any change in shape (geometry) of the cast iron plate, German '998 fails to teach *"applying a metal-forming process,"* as explicitly recited in independent claim 35 of the present invention.

Accordingly, as German '998 does not disclose or render obvious each and every element of, at least, independent claim 35, Applicants respectfully request that the instant rejection be withdrawn and that claim 35, and claims 36-58 which depend therefrom, be allowed.

Without conceding to the validity of the Examiner's rejection of claims 35-41, 50 and 53-68 as being anticipated by German '998, and solely in an effort to advance prosecution, Applicants have amended independent claim 35 to more fully and clearly define the invention and the scope of protection due Applicants. In particular, independent claims 35 and 59 now both recite a "plastic deformation" of the *"metallic plate body"*. This language has been included in independent claims 35 and 59 to specify the claimed type of metal-forming process with respect to other metal-forming processes such as molding. Support for this amendment to claim 35 may be found in the PCT application, as originally filed, e.g., on page 4, lines 16-21 and on page 22, lines 19-21 (i.e., claim 24).

Metallic materials typically used for manufacturing cooling plates, such as copper, for example, exhibit plasticity, i.e., the capability of undergoing non-reversible changes of shape in response to applied force. Accordingly, plastic deformation, as explicitly recited in independent claims 35 and 59, by definition involves a non-reversible change of shape of the metallic plate body in response to applied force.

As discussed above, applying a "shrinkage fit" as taught by German '998 *neither* involves a non-reversible change of shape *nor* the application of force to achieve such non-reversible change.

Consequently, German '998 fails to expressly or inherently disclose any kind of *"plastic deformation"* of the metallic cooling plate, as explicitly recited in independent claims 35 and 59.

Accordingly, Applicants respectfully submit that since German '998 fails to disclose or render obvious each and every element of, at least, independent claims 35 and 59, the Examiner's rejection under 35 U.S.C. § 102(b) is improper. Claims 36-58 and 63-68 which depend respectively therefrom are urged allowable for at least these reasons.

The 35 U.S.C. § 103(a) Rejection of Claims 35-68 Over Hornschemeyer in View of either GB '655 or JP '661

The Examiner ahs rejected claims 35-68 as being unpatentable over Hornschemeyer in view of either GB '655 or JP '661.

Applicants respectfully submit that there is no express teaching or suggestion in either the GB '655, JP '661 or German '998 reference to modify the device of Hornschemeyer as proposed by the Examiner to arrive at the present invention. Moreover, Applicants do not believe that one of ordinary skill in the art would combine the cited prior art references in the manner proposed by the examiner, absent improper and impermissible hindsight reconstruction of the claimed invention.

Applicants respectfully submit that the Examiner's alleged motivation to combine the teachings of Hornschemeyer with those of either GB '655 or JP '661 is improper. Although the Examiner correctly finds that Hornschemeyer teaches that channels may be made by all (any) known methods, this statement clearly relates to methods suitable for providing integrated channels, i.e., methods of forming channels in the plate body (see, e.g., Abstract of Hornschemeyer), such as deep drilling (see claim 8 of Hornschemeyer) for instance.

Even though GB '655 and JP '661 relate to providing coolant passages in a heat exchanger, neither of these references relate to a method suitable for providing channels integrally inside the plate body, e.g., a metal cutting method. GB '655 and JP '661 both merely relate to externally fixing a tube onto a heat exchanger plate. Therefore, the statement in Hornschemeyer quoted by the Examiner (par.[0023]) could not reasonably motivate one of ordinary skill in the art to consider either GB '655 or JP '661. Moreover, there is no need whatsoever to additionally provide coolant tubes within the integrally formed coolant channels proposed by Hornschemeyer, since the integral channels according to Hornschemeyer already provide coolant passages.

Moreover, "[i]n determining the differences between the prior art and the claims, the question under 35 U.S.C. 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious." MPEP 2141.02. In addition, "[a] prior art reference must be considered in its entirety, i.e., as a whole, *including portions that would lead away from the claimed invention.*" (Emphasis added).

Applicants respectfully submit that, upon proper consideration of Hornschemeyer as a whole, this reference clearly teaches away from the claimed invention. In fact, paragraph [0004] discussing the prior art, Hornschemeyer teaches that:

> *"Cooling plates are known in which coolant channels are formed by tubes cast into cast iron. These cooling plates have low heat removal capability due to the low thermal conductivity of cast iron and due to the resistance*

between the cooling tubes and the plate body, caused by an oxide layer or an air-gap." (Emphasis added).

Moreover, in paragraph [0008], Hornschemeyer sets out the objects of its teachings, namely:

"...a quantitatively improved cooling plate with increased cooling effect and high efficiency..." (Emphasis added).

Taking due note of the explicitly stated object in paragraph [0008] of Hornschemeyer and the critical review of prior art cooling plates employing coolant tubes, one of ordinary skill in the art considering Hornschemeyer as a whole is clearly discouraged from providing any additional tubes inside the coolant "channels" taught by Hornschemeyer because such modification would clearly run counter to the state goal of increasing cooling effect/efficiency.

In sum, Applicants respectfully submit that there is not only an utter lack of motivation to combine Hornschemeyer with either GB '655 or JP '661, or any of the other prior art references of record, but Hornschemeyer actually teaches away from such combination. Furthermore, Applicants do not believe that one of ordinary skill in the art would combine the cited prior art references in the manner proposed by the Examiner, absent improper and impermissible hindsight reconstruction of the claimed invention.

Applicants therefore respectfully submit that the Examiner's 103(a) rejection of claims 35-68 is improper and request that the instant rejection be withdrawn and that claims 35-59 and 63-68 be allowed.

CONCLUSION

In view of the amendments and remarks above, it is respectfully submitted that claims 35-59 and 63-68 are now allowable, and an early action to that effect is earnestly solicited.

The Examiner is invited to contact the undersigned at the number below to expedite resolution of any issues the Examiner may consider to remain unresolved. In particular, should a Notice of Allowance not be forthcoming, the Examiner is requested to phone the undersigned for a telephonic interview, an Examiner's amendment, or the like, while the outstanding issues are fresh in the mind of the Examiner.

It is believed that no fees or deficiencies in fees are owed. However, authorization is hereby given to charge our Deposit Account No. 13-0235 in the event any additional fees or deficiencies in fees are owed.

Respectfully submitted,

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